Amendments to the Specification

Please replace the paragraph beginning on page 1, line 8, with the following rewritten paragraph:

In electrostatographic-type copiers and printers in common use, a charged imaging member such as a photoconductive insulating layer of a photoreceptor may be electrically charged and thereafter exposed to a light image of an original document or a laser exposure of a digitally stored document. The exposure discharges the photoconductive insulating surface in exposed or background areas and creates an electrostatic latent image on the member which corresponds to the image areas contained within the original document. Subsequently, the electrostatic latent image on the photoconductive insulating surface is made visible by developing the image with toner. During development, the toner particles are attracted from ~~the~~ carrier particles by the charge pattern of the image areas on the photoconductive insulating ~~area~~ surface to form a powder image on the photoconductive ~~area~~insulating surface. This image may be subsequently transferred to a support surface such as a copy substrate to which it may be permanently affixed by heating or by the application of pressure. Following transfer of the toner image to the support surface, the photoconductive insulating surface may be discharged and cleaned of residual toner to prepare for the next imaging cycle. The imaging processes described above are well known in the art.

Please replace the paragraph beginning on page 2, line 9, with the following rewritten paragraph:

A scorotron device, included within the list above, it typically comprised of one or more corona wires or pin arrays with a conductive control grid or screen of parallel wires or apertures in a charge plate positioned between the corona producing element and the ~~photoconductor~~photoreceptor. A potential is applied to the control grid of the same polarity as the corona potential but with a much lower voltage, usually several hundred volts, which

suppresses the electric field between the charge plate and the corona wires and markedly reduces the ion current flow to the photoreceptor.

Please replace the paragraph beginning on page 3, line 6, with the following rewritten paragraph:

A typical prior art scorotron device with dual pin arrays and a scorotron grid is shown in Figure 1 (Figure 1 is adapted from US-A-4,725,732 which is hereby incorporated herein in its entirety.) In this perspective exploded view, scorotron charging device 100 is shown with two spaced apart, generally parallel pin arrays, 200 and 202, each supported on support projections 204. The distance between arrays 200 and 202 is chosen to be as large as possible consistent with the need for a compact device since smaller spacing between the arrays results in the need to increase power levels to drive the scorotron. Locator pin 208 is provided to correctly position pin array 202 while another locator pin (not shown) positions pin array 200 in a position offset by a spacing of 1/2 pitch in order that each peak of pin array 200 laterally corresponds to a valley of pin array 202 and vice versa. Frame members 206, 238, 212, 230, and 214 contain the corona field emitted from pin arrays 200 and 202 while providing support and means for mounting the arrays. Scorotron grid member 247 attaches to appropriate frame members. Openings in grid member 247 enable the corona field to emerge from charging device 100 and to interact with the charge retentive elements of a charged imaging surface (not shown). Electrically insulated wire 222 conducts charging DC current to pin arrays 200 and 202 while insulated wire 220 conducts regulating current to ~~scorotron~~ grid member 247.

Please replace the paragraph beginning on page 4, line 7, with the following rewritten paragraph:

One approach to improving charge uniformity using scorotron charging devices is set forth in US-A-6,459,873, issued to Song et al., where a pair of scorotrons cooperatively charge the charged imaging surface. The first scorotron device initially charges the imaging

surface to an intermediate overshoot voltage and the second scorotron device thereafter uniformly charges the imaging surface to the final voltage. Improved uniformity is created because the first scorotron device provides a generally high percent open control grid area (a range above 70% is claimed in Song) while the second scorotron device provides a generally lower percent open grid area (a range below 70% is claimed in Song). The higher percent of opening in the first scorotron grid correlates to a greater rate of charging, or slope, while the smaller percent of scorotron grid opening correlates to a lesser slope, or lesser rate of charging. The lesser slope of the second scorotron device enables more precise control of the charging process and, as a result, greater uniformity. Song is hereby incorporated herein by reference in its entirety.

Please replace the paragraph beginning on page 4, line 26, with the following rewritten paragraph:

One embodiment of the invention is a charging system for charging a charge retentive surface ~~having a~~, comprising: at least one corona producing element, spaced from the charge retentive surface and arranged generally along the width dimension; and grid elements, interposed between said corona producing element and the charge retentive surface, wherein the grid elements are arranged generally parallel to each other along the width dimension and comprise differentiated grid feature patterns.

Please replace the paragraph beginning on page 7, line 20, with the following rewritten paragraph:

Referring now to Figure 3, one embodiment of the invention is shown in the form of scorotron grid 400. As shown, grid 400 contains two major shapes of openings. In region 401, the pattern comprises an intersecting set of diamonds. Approximately at the mid-line of grid 400, the feature pattern transitions to ~~the~~ a triangular shape of region 402. In the embodiment shown, the percent opening of the grid 400 is greater than 70 percent in region

401 and less than 70 percent in region 402. Pin array 404 emits a corona charge primarily affected by ~~grid~~ region 401 while pin array 406 emits a corona charge primarily affected by ~~grid~~ region 402. Since pin arrays 404 and 406 are staggered by ½ pitch, grid 400 combines into one scorotron device three separate means for rendering scorotron corona fields more uniform: 1) the pin arrays are staggered by ½ pitch; 2) the percent openings in grid 400 vary by percent; and 3) the feature pattern of the grid wires themselves is altered. Since the substrate path, as indicated by arrow 410, takes the imaging width of the substrate (not shown) past both regions 401 and 402, the result is more uniform charging than if the same feature pattern were used in region 401 and in region 402.

Please replace the paragraph beginning on page 8, line 9, with the following rewritten paragraph:

Referring to Figure 4, a second of many possible embodiments of the invention is shown in the form of dual scorotron grids 501 and 502 indicating two separate scorotron devices. Placed side-by-side across the width dimension of the substrate path indicated by arrow 510, the dual scorotron devices may function in the manner described above in relation to US-A-6,459,873, issued to Song et al. Grid 501, having at least a 70 percent opening, is intended to operate as part of a scorotron charging device having a high slope. Grid 502, having about a 50 percent opening, is intended to operate as part of a scorotron charging device having a lower slope. Together, they operate to bring the charged imaging substrate (not shown) to the desired charging potential, with the scorotron charging device <u>504</u> associated with grid 501 delivering the majority of the charging potential and the scorotron charging device <u>506</u> associated with grid 502 providing a lesser charge while leveling any charge non-uniformity.

Please replace the paragraph beginning on page 8, line 22, with the following rewritten paragraph:

As seen in Figure 4, the grid feature patterns in grid 501 differs from the grid pattern in grid 502. Whereas the grid feature patterns in Figure ~~2~~ 3 differed due to varying geometric shapes, the grid feature patterns in Figure ~~3~~ 4 both have the same geometric shape but differ in feature size. Specifically, the mesh of grid 501 is comprises of mesh wire 0.3 ±0.07 millimeters wide with each hexagon being 2.0 ±0.1 millimeters across. As shown, this combination results in a 1.73 millimeter distance between two parallel lines that each are orthogonal to a hexagon side and that intersect the centers of two adjoining hexagons. In contrast, comparable measurements of the embodiment shown as grid 502 are 0.41 ±0.07 for mesh wire size, 1.5 ±0.1 millimeters for hexagon size, and 1.3 millimeters between comparable parallel lines intersecting the centers of adjoining hexagons.

Please replace the paragraph beginning on page 9, line 7, with the following rewritten paragraph:

The impact upon charging uniformity of using scorotron grid elements having differentiated patterns is shown in the bar charge of Figure 5. In this Figure, results using two scorotron grid element arrangements are compared. In both arrangements, two scorotron charging devices were mounted side-by-side in a manner similar to that shown in Figure 4. In both instances, the first scorotron grid of the first scorotron device in the pair corresponded to the grid parameters of grid 501 shown in Figure 3, i.e., 70% hexagonal openings. For the bar labeled "Same Hex", the second scorotron grid utilized the same 1.73 millimeter feature spacing between parallel lines intersecting adjoining hexagon centers but used thicker wire mesh to reduce the openings to fifty (50) percent openings. In other words, the feature pattern was the same size but the line thickness was greater within each feature. For the bar labeled Different Hex, the dimensions of grid 502 from Figure ~~3~~ 4 were used. In other words, both

scorotron sets were identical 70:50 percent grid opening pairs but the "Different Hex" achieved its 50% opening grid using a different scorotron grid feature pattern while the "Same Hex" used the identical size and shape hexagon in both first and second grids.

Please replace the paragraph beginning on page 9, line 24, with the following rewritten paragraph:

The results confirm the advantages of using different grid patterns. Whereas the bar in Figure ~~4~~5 corresponding to the "Same Hex" grid configuration shows detectable charging non-uniformities in excess of 0.14 L* amplitude as measured in 1976 CIE L*a*b space. The bar corresponding to the "Different Hex" grid configuration showed no discernible defects.